STACKED ROOFING WASHERS ASSEMBLY

FIELD OF THE INVENTION

The present invention relates to a stacked roofing washers assembly wherein only the last one washer is force-fitted with the elongate flexible member which can be forcibly disengaged from the last one washer and easily pulled through the central apertures of the rest of the washers.

BACKGROUND OF THE INVENTION

A conventional stacked roofing washers assembly is disclosed in U.S. Patent No. 5,163,580, and generally includes a plurality of roofing washers which are collated by a flexible member extending through respective central apertures in the roofing washers. A formation such as a knot is formed at an end of the flexible member after the flexible member extends through the roofing washers so that the stacked roofing washers can be hanged when pulled from the other end of the flexible member. The formation can be deformed if the flexible member is forcibly pulled way from the stacked of roofing washers. The deformed knot is so deformed that it is able to be forcibly pulled through the central apertures. Nevertheless, the deformation of the formation cannot be controlled and could be slightly too large to be pulled through the central apertures which are enlarged or damaged.

The present invention intends to provide a stacked roofing washers assembly wherein the elongate flexible member is smaller than the central apertures of the washers and is only force-fitted with the last one washer. The

elongate flexible member can be disengaged from the last one washer and easily pulled through the central apertures of the rest washers.

SUMMARY OF THE INVENTION

The present invention relates to a roofing washers assembly which comprises a plurality of stacked roofing washers and each roofing washer has a central aperture. A positioning roofing washer is located at an end of the stacked roofing washers and has a positioning aperture. An elongate flexible member extends through the central apertures of the stacked roofing washers and a first end of the elongate flexible member is force-fitted with the positioning aperture of the positioning roofing washer. A diameter of the elongate flexible member is smaller than an inner diameter of the central apertures and larger than an inner diameter of the positioning aperture. The first end of the elongate flexible member can be disengaged from the positioning aperture by forcibly pulling from the second end of the elongate flexible member.

The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded view to show the stacked roofing washers and the elongate flexible member of the present invention;

Fig. 2 shows the elongate flexible member extends through the washers of the present invention;

Fig. 2-1 shows an enlarged cross sectional view of the first end of the elongate flexible member force-fitted with the positioning aperture of the positioning washer;

Fig. 3 shows the stacked roofing washers are put in the magazine of the dispenser and the elongate flexible member is to be pulled from the washers;

Fig. 4 shows the stacked roofing washers are put in the magazine of the dispenser and the elongate flexible member is pulled from the washers;

Fig. 5 is a cross sectional view to show a second embodiment of connection of the elongate flexible member and the last one washer of the stacked roofing washers;

Fig. 6 shows a positioning piece is connected to the first end of the elongate flexible member that extends through the last one washer of the stacked roofing washers;

Fig. 7 shows that the positioning piece is made by a small piece of glue;

Fig. 8 shows the positioning piece permits the stacked roofing washers to be hanged at a second end of the elongate flexible member;

Fig. 9 shows the positioning piece breaks into pieces when the user pulls from the second end of the elongate flexible member, and

Figs. 10 to 13 show different shapes of the positioning apertures.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Fig. 1, the roofing washers assembly of the present invention comprises a plurality of stacked roofing washers 10 and each roofing washer 10 has a central aperture 12 defined therethrough. A positioning roofing washer 101 is located at an end of the stacked roofing washers 10 and has a positioning aperture 11 defined through a center thereof. An elongate flexible member 20 has a first end thereof extending through the central apertures 12 of the stacked roofing washers 10 and the positioning aperture 11 of the positioning roofing washer 101.

Referring to Figs. 2 and 2-1, a diameter of the elongate flexible member 20 is smaller than an inner diameter of the central apertures 12 so that the elongate flexible member 20 can be pulled through the central apertures 12 easily without too much friction. The diameter of the elongate flexible member 20 is larger than an inner diameter of the positioning aperture 11 so that the first end of the elongate flexible member 20 is force-fitted with the positioning aperture 11. As shown in Figs. 3 and 4, the stacked roofing washers 10 can be hanged by holding a ring 21 on a second end of the elongate flexible member 20. Therefore, the user may hold the ring 21 and put the stacked roofing washers 10 in the magazine 31 of the roofing washers dispenser 30. After the stacked roofing washers 10 are put in the magazine 31 of the roofing washers dispenser 30, the user forcibly pulls the elongate flexible member 20 upward and the first end of the elongate flexible

member 20 is disengaged from the positioning aperture 11. The stacked roofing washers 10 are then conveniently put in the magazine 31.

As shown in Figs. 10 to 13, the positioning aperture 11 can be a polygonal aperture such as a triangle aperture, a rectangular aperture, a slit or any shape that is force-fitted to the first end of the elongate flexible member 20.

As shown in Figs. 6 to 8, another embodiment of the stacked roofing washers assembly of the present invention a plurality of stacked roofing washers 10 and each roofing washer 10 having a central aperture 12 and a first end of an elongate flexible member 20 extends through the central apertures 12 of the stacked roofing washers 10. A diameter of the elongate flexible member 20 is smaller than an inner diameter of the central apertures 12. The first end of the elongate flexible member 20 extending through the central aperture 12 of the last one roofing washer 10 of the stacked roofing washers assembly is connected to a positioning piece 22 which is made by using a glue 32 as shown in Fig. 7. The positioning piece 22 is sized to be larger than the inner diameter of the central apertures 12 so that the user may hold holding a ring 21 on a second end of the elongate flexible member 20. The user holds the ring 21 and put the stacked roofing washers 10 in the magazine of the roofing washers dispenser 30. After the stacked roofing washers 10 are put in the magazine, the user pulls the ring 21 away from the stacked roofing washers 10, and the positioning piece 22 is separated from the first end of the elongate flexible member 20, so that the elongate flexible

member 20 can be easily pulled through the central apertures 12 of the roofing washers 10. As shown in Fig. 9, the positioning piece 22 can be made to break into pieces when the elongate flexible member 20 is forcibly pulled from the second end thereof.

While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.